BEDES Technical Working Group
Third Meeting—February 25, 2014 (9:00-12:30)

Convener: Rick Diamond, LBNL
Facilitator: Dr. Jonathan Raab, Raab Associates, Ltd.
(See TWG Attendees in Attachment 1)

9:00   **Welcome, Introductions, & Overview**

Rick Diamond welcomed TWG Members, explained his role and recapped yesterday's SWG meeting before turning it over to Jonathan Raab to review the agenda and today's goals as well as add to yesterday's recap. Recap of yesterday's SWG meeting included:
- **Branding/BEDES Name**. For now, we will go forward with BEDES but continue to explore alternatives
- **Hosting**- what are the tasks that hosts do, what are the potential qualifications required. There was not clear consensus for hosts, but 2 scenarios which LBNL will flesh out and get back to the group (Open Source approach and Hybrid approach with non-profit, DOE, and Labs)
- **Becoming a Standard**
    o   Pro- reference-able, can be cited
    o   Cons- expensive, time consuming
    o   Maybe standard at a later date. No consensus, will revisit at future SWG meeting
- Discussion
    o   The group discussed how BEDES is really the whole data exchange platform/open source activity, and that the BEDES dictionary is just one piece of it.

9:10   **Grouping, Hierarchy, and Prioritization**

Robin Mitchell, LBNL reviewed her slide deck on these topics (see BEDES website for slides), and made the following points:

- The Built environment is complex, different data users use the data in different ways, and define different relationships between it.
- Grouping--BEDES is not flat, it is not hierarchical, it does not have a schema, there are no relationships between the data—it is more like a dictionary
- Prioritization- there wouldn't be any within the BEDES document as it is not BEDES' job to present relationships or priorities among fields. But BEDES would allow the use cases and users of BEDES to implement relationships and priorities within their own schema, software, etc.
- Next Steps-- Get the terms determined and then get the definitions set, and send out Module 1 and eventually Module 2 for review.

Following are points made by SWG Members during the ensuing discussion on these related topics:

- Take out hierarchy wherever possible (inherent in some names, e.g., boiler pump efficiency). Avoid defined relationships wherever possible.
    - o Potentially use first order, second order terms and allow for compound terms to imply relationship
- Include some metadata fields for tracking
    - o Use standard for derived fields
    - o Don't tell people how to compute. Derivation shouldn't be bundled in term. Should be made available by user (or find consensus through open source)
    - o Hard to sort if definitions are in different rows. Metadata is most useful if it is the same for every field.
    - o Candidate metadata: When it was calculated, how it was calculated, direct or derived, whether it is default (there could be a default value and it is tracked Y/N), required (T/F) vs. optional (T/F), SI (Y/N), English system (Y/N), source, (might be better to define the unit type as some are hard to translate such as efficiency).
    - o Metadata as a topic for the next meeting. Consider setting up forum and use list above to start the discussion—in the meantime can email Robin additional candidate metadata.
- Need validation of fields
    - o BEDES cannot validate data, it is up to the user.
    - o There are valid and invalid relationships between fields. Need logical relationships between fields in order to mandate compliance.
    - o NFRC example: people are certified and follow standard procedures
- Grouping graphic is misleading
    - o Problem to split on commercial/residential
    - o Human readability vs. machine readability WRT alphabetized BEDES list
    - o Create dynamic online document in future
- Schema testing and data validation could be responsibility of management entity
    - o You might not want to have "illegal" values in BEDES, like -1 for floor area
- For any list that we have, we need to define the meaning of the items in the list.
    - o Where possible, we could just reference a standard definition.
        - ▪ Shouldn't reference things that you must pay to get access to
        - ▪ If you publish the definition then you have to maintain/update it
- Should fields be mutually exclusive?- a consideration for LBNL in fleshing out Modules 1 and 2

11:15 **Module 2: Equipment Level Data**

Bob Hendron, NREL, described his effort related to Module 2 to create a commercial audit use case mapping, and made the following points (See BEDES website for presentation):

- The project is a dictionary, schema and simple software to pilot (set of forms), then will assist partners in rolling it out with a real interface
- Leveraging work already done, including BEDES and then feeding back into BEDES.
- Using electronic review process in a google spreadsheet and then conference calls
- Listing the measures as opposed to just doing pre equipment and post equipment to make it easier to roll up and be more flexible.
- Key areas for discussion, deferred to BEDES:

- o Implied hierarchy in fields (boiler pump efficiency, pump efficiency, vs. efficiency) impacts how specifically you can define efficiency
- o Should it require specific units
- o Metadata fields – e.g., predicted vs actual, measured/default/estimated, nameplate
- o Calculated fields
- o Data constraints, e.g., max/min, whole numbers

Bob then responded to the following questions from SWG Members
- o What about HP XML and GB HML?
    - ▪ GB XML – focused on commercial building modeling software, have used some fields but many are too granular for this use case
    - ▪ HP XML – residential data specification, already a lot of thought and discussion so using it as a reference
    - ▪ Does the work we're doing now limit the ability to extend into GB XML in the future?

- o Why create fields for measures?
    - ▪ The pull down menu describes the action (replaced, etc). So it has both the actions and the ability to fully define the before and after states.
- o What about IEP XML
    - ▪ IEP XML is one of the key specs for BEDES, some fields are taken from or mapped to IEP XML
    - ▪ But IEP XML has schemas, etc., that are not in BEDES (Note action item to send info to Bob)

Raab and Diamond then reviewed the proposed next steps for developing and reviewing Module 2 including:
- o LBNL will develop a live document that people can comment on
- o Not going to have Sub-Group meetings until we have a game plan for Module 2,
- o Probably going to change the dates and topics for the Sub-Group meetings for Module 2, including canceling Sub-Group calls on March 11 & 13.
- o Will present game plan to TWG at next scheduled TWG call on March 25th

TWG Members made the following suggestions about completing Module 1 and commencing on Module 2:
- o Maybe there could be sub-committees around some issues, e.g., via an online forum about (for instance) metadata
- o Some members say they tend to have more time if opportunities to comment are asynchronous, they can fit it in wherever vs. scheduled time
- o Like detailed questions in thread or forum (field by field, specific questions) between meetings, but there is still value in holding scheduled meetings

The meeting ended after LBNL flagged the fact that the next face-to-face meeting of the TWG and SWG is scheduled for the day after Easter. This day may need to be changed, or another suggestion was to have an east coast (D.C.)/west coast (at LBNL) dual video-linked meeting.

Attachment 1: TWG Attendees In-Person and by Phone

2/25 TWG in person	Affiliation
Andrea Mercado	LBNL
Avery Kitner	Empowered Energy Solutions
Bob Hendron	NREL
Devan Johnson	KW-Engineering
Elena Alschuler	Department of Energy
Jessie Knapstein	Energetics, Inc.
John Mejia	LBNL
Jonathan Raab	Raab Associates
Marc Costa	Energy Coalition
Marshall Duer-Balkind	DC Department of the Environment
Steve Abercrombie	Innovate Washington
Shankar Earni	LBNL
Magnus Cheifetz	Building Energy
Rick Diamond	LBNL
Robin Mitchell	LBNL
2/25 TWG phone	**Affiliation**
Jon Keck	Bright Power
Michael Deru	NREL
Lindsay Robbins	NYSERDA
Joshua New	ORNL
Darren Port	NEEP
Julie Caracino	National Home Performance Council
Amir Roth	Department of Energy
Jayson Antonoff	Institute for Market Transformation
Rick Balsano	Opower
Barry Hooper	SF Department of the Environment
Adam Wallen	SkyFoundry
Steve Kismohr	Midwest EEA